

Appl. No. 10/052,801
Amdt. Dated April 5, 2006
Reply to Office Action of November 15, 2005

Attorney Docket No. 89160.0003
Customer No.: 26021

REMARKS/ARGUMENTS

Claims 1-33 were pending in the Application. By this Amendment, claims 1, 3, 16, 17, 23, 31 and 33 are being amended, and claims 15, 20 and 21 are being cancelled, to advance the prosecution of the Application. Claims 1-14, 16-19 and 22-33 remain pending in the Application. No new matter is involved.

In Paragraph 3 which begins on page 2 of the Office Action, claims 1, 9-30 and 33 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,877,653 of Kim, et al. In Paragraph 5 which begins on page 6 of the Office Action, claims 31 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim, et al. In Paragraph 6 which begins on page 7 of the Office Action, claims 2-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim et al. and further in view of Applicants' admitted prior art. These rejections are respectfully traversed.

Regarding the Kim reference not disclosing a differential spurious ratio control system, the office action notes that the subtraction and canceling functions of subtractor 219 and coupler 223 provide an instantaneous differential spurious control system in the manner of claim 1.

This comment completely misapplies the terms of this invention. Subtractor 219 of Kim or summing coupler 50 and coupler 223 of Kim or error signal Injection Coupler 231 of Posner are used for generating RF signals, but by themselves or in combination do not form an instantaneous differential spurious control system. Subtractor 219 of Kim or summing coupler 50 of Posner is used to generate a carrier cancelled signal (Sa1 & Sa2, Fig 2), which is amplified by the error Amplifier to be injected into injection port of coupler 223 of Kim or error signal Injection Coupler 231 of Posner. The resultant of this injection signal injection is monitored at the Second Monitoring Point. Contrary to the position in the office action, the

two elements by themselves do not form an instantaneous spurious ratio system as claimed by Kim, but instead these elements are common to most conventional Feed Forward Amplifiers.

As claimed, the present invention provides a coherent spurious signal ratio control system. A spurious ratio control (for error loop) signal is formed when RF signals Sb1 is ratioed vs. Sa1 and Sb2 ratioed vs. Sa2. Similarly, a predistorter ratio control (for loop 1) signal is formed when RF signals Sb1 is ratioed vs. Sc1 and Sb2 ratioed vs. Sc2.

To form a coherent spurious ratio RF signal Sb1 must arrive at nearly the same time as Sa1 (similarly Sb2 and Sa2). This easily and practically accomplished through a simple group delay alignment at respective sampling measurements points 401, 402 and 403 through cabling selection commonly known in the art.

In comparison, Kim is incapable of forming coherent spurious ratios as it relies on Signal Selector 235 to perform discrete time sampled measurements of input signals (SF1 through SF4) (col. 6, Line 37-41) to form time discrete signal SF which represents RSSI of the selected RF signal. As such, RSSI signal is a sampled representation of the actual RF signals, but taken at different times due to time delays associated in signal processing in the controller 237, settlement, averaging and acquisition time of the signal detector 236 and a switching speed of signal selector 235. All of these delays will prevent Kim from forming a coherent spurious to spurious signal ratio control system. As is well known in the art, the RF signal group delay in a typical RF amplifier is less than 20 nS whereas a suitable RF measurement components and microprocessor speeds are on the order of microseconds. Hence it is impossible to measure RF signals coherently with Kim.

In an effort to even further distinguish patentably over Kim, et al., Applicants are amending claim 1 by adding the limitations of claim 15 thereto, with

claim 15 being cancelled in view thereof and the dependency of claim 16 being changed accordingly. The linear amplifier of claim 1 includes a feed-forward linear amplifier and a differential spurious ratio control system having a first input coupled to the first monitoring point, a second input coupled to the second monitoring point, a third input coupled to a source of frequency information, and a control output coupled to a control input of the feed-forward liner amplifier. As amended, the differential spurious ratio control system of claim 1 further includes "a first receiver coupled to the first monitoring point, a second receiver coupled to the second monitoring point, and a ratio detector having a first ratio detector input coupled to a first receiver output, a second ratio detector input coupled to a second receiver output, and a ratio detector output coupled via the controller to the control output". This definition of the differential spurious ratio control system of claim 1 in even further and greater detail clearly distinguishes patentably over Kim, et al.

Claims 2-14 and 16 depend from and contain all of the limitations of claim 1 so as to also distinguish patentably over the prior art. In the case of claims 2-8 which were rejected on a combination of Kim and Applicants' admitted prior art, the admitted prior art does not remedy the basic deficiency of Kim, et al. with respect to the features of the invention set forth in the claims. Claim 3 is being amended to correct the dependency thereof.

Similarly, claim 17 is being amended to further define the differential spurious ratio control system thereof by adding the limitations of claims 20 and 21 thereto, with claims 20 and 21 being cancelled in view thereof. In addition to the differential spurious ratio control system having a first input coupled to the first monitoring point, a second input coupled to the second monitoring point, a third input coupled to a frequency information output of the signal source, and a control output coupled to a control input of the second gain and phase adjusting circuit,

Appl. No. 10/052,801
Amdt. Dated April 5, 2006
Reply to Office Action of November 15, 2005

Attorney Docket No. 89160.0003
Customer No.: 26021

claim 17 as amended includes “a first narrowband receiver coupled to the first monitoring point for capturing the spurious component at the output of the summing coupler”, and “a second narrowband receiver coupled to the second monitoring point for capturing the spurious component of an output signal of the feed-forward amplifier”. The control system further comprises “a ratio detector having a first ratio detector input coupled to a first narrowband receiver output, and a second ratio detector input coupled to a second narrowband receiver output, for detecting the ratio of the spurious component at the output of the sampling coupler and the spurious component of the feed-forward amplifier output signal”. As so amended, claim 17 is submitted to clearly distinguish patentably over Kim, et al.

Claims 18, 19 and 22 depend from and contain all of the limitations of claim 17, so that such claims also distinguish patentably over the art.

Claim 23 as amended herein distinguishes patentably over the art by including in the method thereof the step of “instantaneously comparing the second spurious component to the first spurious component to form a coherent differential ratio control signal”. Claims 24 and 30 depend from and contain all of the limitations of claim 23 so as to also distinguish patentably over the prior art.

As amended herein, the method of claim 31 includes the steps of “instantaneously comparing the second spurious component to the first spurious component to form a coherent differential error loop ratio” and “instantaneously comparing the first spurious component to the third spurious component to form a coherent differential pre-distorter ratio.” Therefore, claim 31 is submitted to clearly distinguish patentably over the art.

Similar comments apply to claim 32 which depends from and contains all of the limitations of claim 31.

Appl. No. 10/052,801
Amdt. Dated April 5, 2006
Reply to Office Action of November 15, 2005

Attorney Docket No. 89160.0003
Customer No.: 26021

As amended, the method of claim 33 includes the step of "instantaneously comparing the spurious component of the second spurious component with the first spurious component in the control circuit to form a coherent differential ratio." Accordingly, such claim is submitted to clearly distinguish patentably over the art.

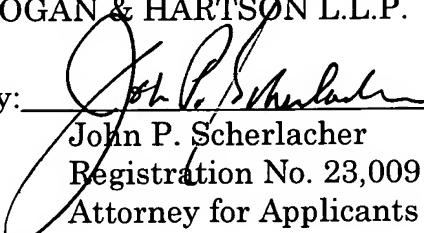
In conclusion, claims 1-14, 16-19 and 22-33 are submitted to clearly distinguish patentably over the prior art. Therefore, entry of this Amendment under the provisions of 37 C.F.R. § 1.116 as placing the Application in condition for allowance or alternatively in better form for appeal, and reconsideration and allowance in view thereof, are respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6846 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: April 5, 2006

By: 
John P. Scherlacher
Registration No. 23,009
Attorney for Applicants

500 South Grand Avenue, Suite 1900
Los Angeles, California 90071
Phone: 213-337-6700
Fax: 213-337-6701